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Abstract of the Invention

A differential interferometric confocal microscope for measuring an object, the microscope including: a source-side pinhole array; a detector-side pinhole array; and an interferometer that images the array of pinholes of the source-side pinhole array onto a first array of spots located in front of an object plane located near where the object is positioned and onto a second array of spots behind the object plane, wherein the first and second arrays of spots are displaced relative to each other in a direction that is normal to the object plane, the interferometer also (1) imaging the first arrays of spots onto a first image plane that is behind the detector-side pinhole array, (2) imaging the first array of spots onto a plane defined by the detector-side pinhole array, (3) imaging the second array of spots onto a second image plane that is in front of the detector-side pinhole array, and (4) imaging the second array of spots onto the plane defined by the detector-side pinhole array, wherein each spot of the imaged first array of spots in the first image plane is aligned with a corresponding different spot of the imaged second array of spots in the second image plane and a corresponding different pinhole of the detector-side pinhole array, and wherein each spot of the imaged first array of spots in the plane defined by the detector-side array coincides with a corresponding different spot of the imaged second array of spots in the plane defined by the detector-side array and coincides with a corresponding different pinhole of the detector-side pinhole array.